What is SARE?
Since 1988, the Sustainable Agriculture Research & Education (SARE) program has been the go-to USDA grants and outreach program for farmers, ranchers, researchers and educators who want to develop innovations that improve farm profitability, protect water and land, and revitalize communities. To date, SARE has awarded over $332 million to more than 7,724 initiatives.

SARE is grassroots with far-reaching impact
Four regional councils of expert practitioners set priorities and make grants in every state and island protectorate.

SARE communicates results
SARE shares project results by requiring grantees to conduct outreach and grower engagement; and by maintaining an online library of practical publications, granteeproduced information products and other educational materials.

SARE in South Carolina
southern.sare.org/sare-in-your-state/south-carolina

Project Highlight: Fruit Bagging Reduce Reliances on Pesticides
When Clemson University fruit specialist Juan Carlos Melgar suggested putting a paper bag over a peach to detract insects and diseases during production, farmers laughed. But when his SARE-funded trials showed that the technique protects the fruit from devastating brown rot, marauding insects like plum curculio and even hungry birds, producers and backyard growers started paying attention.

Researchers found that bagging peaches between petal fall and harvest reduces pesticide use while increasing yields and maintaining flavor. Even though it involves more labor, Melgar estimated that bagging can increase revenue by $95 per tree in an organic system when the fruit is sold directly to consumers. “We’ve gotten a lot of positive responses from farmers all over the country as a result of the research study,” said Melgar.

Fruit bagging for protection is a common strategy in Asia. With South Carolina ranked second in the nation behind California in peach production at 77,000 tons, researchers at Clemson felt that applying the technique to orchards was a worthwhile endeavor because peach growers in the southeastern U.S. face very high pest and disease pressures. Melgar is taking this research to a regional level with a newly acquired $1 million USDA-NIFA grant, applying the technique to more orchards in South Carolina, Georgia and Florida.

For more information on this project, see sare.org/projects, and search for project number OS16-094.

$3,280,190 in total funding
67 grant projects
(since 1988)
For a complete list of grant projects state by state, go to www.sare.org/state-summaries
SARE Grants in South Carolina

Total awards: 67 grants
15 Research and Education
6 Sustainable Community Innovation
11 Professional Development Program
19 Farmer/Rancher
6 Graduate Student
10 On Farm Research/Partnership

Total funding: $3,280,190
$2,199,566 Research and Education
$43,620 Sustainable Community Innovation
$648,853 Professional Development Program
$171,910 Farmer/Rancher
$73,864 Graduate Student
$142,377 On Farm Research/Partnership

Find a complete list of projects on page 3.

SARE's Impact

53 percent of producers report using a new production technique after reading a SARE publication.

79 percent of producers said they improved soil quality through their SARE project.

64 percent of producers said their SARE project helped them achieve higher sales.

Learn about local impacts at: southern.sare.org/sare-in-your-state/south-carolina

Contact Your SARE State Coordinator

SARE sustainable ag coordinators run state-level educational programs for Extension and other ag professionals, and many help grant applicants and recipients with planning and outreach. Visit southern.sare.org/state-pages/south-carolina to learn more.

Edoe Agbodjan
South Carolina State University
(803) 707-2112
eagbodjan@scsu.edu

Matt Smith
Clemson University
(843) 519-0464
mcs5@clemson.edu

For detailed information on SARE projects, go to www.SARE.org

SARE is funded by the USDA’s National Institute of Food and Agriculture (NIFA).

This report includes summaries of competitive grant programs only. Some competitive grant programs that are no longer offered may be included or excluded from the totals in this report depending on the grant program and SARE region.
South Carolina has been awarded $3,280,190 grants to support 63 projects, including but not limited to, 11 research and/or education projects, 11 professional development projects and 19 producer-led projects. South Carolina has also received additional SARE support through multi-state projects.

### RESEARCH AND EDUCATION GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS21-355</td>
<td>Gullah/Geechee Agro-Culture: Sustaining Culture to Sustain Agriculture in the Lowcountry</td>
<td>$341,346</td>
<td>Dr. Najmah Thomas&lt;br&gt;University of South Carolina Beaufort</td>
</tr>
<tr>
<td>LS21-359</td>
<td>Strengthening Farmer-consumer Connections for Sustainable Agricultural Systems</td>
<td>$213,954</td>
<td>Courtney Quinn&lt;br&gt;Furman University&lt;br&gt;Dr. Karen Allen&lt;br&gt;Furman University&lt;br&gt;Dr. John Quinn&lt;br&gt;Furman University</td>
</tr>
<tr>
<td>LS19-306</td>
<td>Utility of Anaerobic Soil Disinfestation and Organic Herbicides for Weed and Disease Management in Organic Solanaceous Vegetable Systems</td>
<td>$293,470</td>
<td>Matthew Cutulle&lt;br&gt;Clemson University, CREC</td>
</tr>
<tr>
<td>LS19-305</td>
<td>Incorporating Natural, Non-toxic Arthropod Resistant Tomato Varieties into Southern Production Systems</td>
<td>$299,963</td>
<td>Juang-Horng Chong&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>LS16-273</td>
<td>Improving Silvopasture Systems in the South: Identification of Suitable Forage Crops and Enhancement of Environmental Quality in Upland Forests</td>
<td>$135,487</td>
<td>Dr. John Quinn&lt;br&gt;Furman University</td>
</tr>
<tr>
<td>LS09-217</td>
<td>Improvement of the safety of food handling practices on small farms</td>
<td>$200,000</td>
<td>Dr. Paul Dawson&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>LS06-188</td>
<td>Expanding the grazing season for sustainable year-round forage-finished beef production</td>
<td>$163,000</td>
<td>Susan Duckett&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>LS04-213</td>
<td>Development and Integration of Sustainable Agriculture Core Curriculum Training into the Southern Region Extension Education System</td>
<td>$241,000</td>
<td>Dr. Geoff Zehnder&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>LS03-157</td>
<td>Suppression of weeds and other pests in fresh market vegetables using wild radish cover crop</td>
<td>$173,125</td>
<td>Jason Norsworthy&lt;br&gt;Clemson University</td>
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<tr>
<td>LS03-155</td>
<td>Creating a value chain system for local and regional farm products</td>
<td>$19,310</td>
<td>Dr. Geoff Zehnder&lt;br&gt;Clemson University</td>
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<tr>
<td>LS93-054</td>
<td>Evaluation of Low-Input, No-Till, No-Herbicide Continuous Grazing System for Dairy Cows</td>
<td>$118,911</td>
<td>Jean Bertrand&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>Project #</td>
<td>Project Title</td>
<td>SARE Support</td>
<td>Project Leaders</td>
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</tbody>
</table>
| SPDP21-01  | Train the Trainers: Reducing impacts from harmful algal blooms in livestock water sources in South Carolina | $79,975      | Dr. Debabrata Sahoo  
Clemson University  
Dr. Matthew Burns  
Clemson University  
Mark Nettles  
South Carolina State University, 1890 Research and Extension  
Heather Nix  
Clemson University Cooperative Extension  
Dr. Michael Vassalos  
Clemson University  
Sarah White  
Clemson University |
| ES19-150   | Advanced Soil Health Training for South Carolina Agriculture Professionals    | $79,847      | Kelly Flynn  
Clemson University |
| ES17-137   | Wholesale Success: Building the capacity of farmers to meet demand for locally and sustainably grown produce | $78,008      | Dr. Geoff Zehnder  
Clemson University |
| ES13-117   | Training in Renewable Energy Systems for Small Farms to Reduce Energy Costs and Improve Profitability | $78,128      | Dr. Geoff Zehnder  
Clemson University |
| ES11-108   | Pollinator Conservation Short Course                                         | $92,066      | Eric Mader  
The Xerces Society |
| ES10-106   | On-Farm Training in Organic Pest Management Practices for Small, Diversified Farms | $83,775      | Dr. Geoff Zehnder  
Clemson University |
| ES02-064   | Calhoun Fields Laboratory: A Program for Experiential Training in Organic Farming Systems | $49,926      | Dr. Geoff Zehnder  
Clemson University |
| ES01-057   | South Carolina Farm and Forest Land Conservation Training                    | $25,428      | Ben Boozer  
Clemson Institute for Economic & Community Develop |
| ES97-018   | The First Requirement of Agriculture Sustainability: Efficient Management of Available Resources | $60,000      | Charles Q. Artis  
South Carolina State University, Community and Economic Development |
| ES97-017   | Overcoming Training Obstacles: A Realistic Cost-Effective Approach            | $10,000      | Charles Q. Artis  
South Carolina State University, Community and Economic Development |
| LST94-006  | Extending Sustainable Agriculture Concepts and Practices to Traditional Agricultural Advisors | $11,700      | Jim Palmer  
Clemson |

**FARMER/RANCHER GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
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</tr>
</thead>
</table>
| FS21-330   | Does Treatment with Chlorella vulgaris Extend the Life of Tomato Plants to Increase Tomato Sales? | $14,640      | Dale Snyder  
Sweetgrass Garden Co-op |
| FS20-326   | Summer Cover Crops for Organic No-till Broccoli                                | $14,820      | Sarah Belk  
Wild Hope Farm |
| FS18-309   | Studying the Use of Copper to Raise Healthier Goats                             | $10,000      | Judy Langley  
Windy Hill Farm |
Scaling Indigo Production in South Carolina  $5,965  Kathy McCullough Farmer

Modified Method for Roller-Crimper No Till System in the Southeast Coastal Plain  $8,327  Mary Connor Three Sisters Farm

Is freshwater fish compost as effective as saltwater fish compost on vegetable production?  $10,000  Dale Snyder Sweetgrass Garden Co-op

Shade cloth for fall bearing blackberry druplet abortion/malfunction problems in southeastern USA  $6,458  Walker Miller The Happy Berry Bunch

Cucumber Pollination with Bumblebees  $8,530  David MacFawn Rawl Farms

Is Fish Waste Compost worth the Mess and Effort?  $9,848  Dale Snyder Sweetgrass Garden Co-op

Forage Chicory Use in Rotational Grazing of Sheep to Reduce Intestinal Worms, Reduce Grain Supplementation, And Maximize Growth  $9,078  Kathy McCaskill Old McCaskill's Farm

Using Buckwheat to Attract Beneficial Insects for Crop Protection  $9,037  Daniel Parson Parson Produce

Dual Season Organic Asparagus Production  $9,995  Mary Connor Three Sisters Farm

Edamame Variety Trials for the Local Fresh Market  $4,777  Carolyn A. Prince

Cattle Lane Construction Alternatives That Enhance Intensive Grazing Systems  $9,850  Tom Trantham Trantham's Dairy Farm

Red Plastic Mulch as an Alternative to Insecticides in Production of Seedless Watermelons  $7,390  John Frazier

Demonstration of a Low-Input Diversified Small Farm Operation  $9,200  Theodore Nesmith

Cover Crops in Integrated Vegetable Production Systems  $9,285  Charles Wingard W.P. Rawl & Sons Farms

Vegetable Marketing Strategies for a Small Farm Co-op  $10,000  Curtis Inabinett Sea Island Farmers Co-op

Clover Cover Crops, Weed Management and Consumer Tolerance to Insect Damage  $4,710  Horace & Shaw Skipper The Berry Patch

GRADUATE STUDENT GRANTS

Project #  Project Title  SARE Support  Project Leaders

GS18-192  Cover Cropping to Improve Soil Moisture Content for the Following Cash Crop  $16,496  Dr. Sruthi Narayanan Clemson University  Ricardo St. Aime Clemson University
<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
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</thead>
<tbody>
<tr>
<td>GS17-174</td>
<td>Optimizing Nutritional Management in Fruit Tree Production in Southern U.S.</td>
<td>$16,441</td>
<td>Juan Carlos Melgar, Qi Zhou</td>
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<tr>
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<td>Clemson University, Clemson University</td>
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<tr>
<td>GS13-126</td>
<td>Weeds, Nitrogen, and Yield: Measuring the Effectiveness of an Organic No-Till System</td>
<td>$10,927</td>
<td>Dr. Geoff Zehnder, David Robb</td>
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<td>Clemson University, Clemson University</td>
</tr>
<tr>
<td>GS04-034</td>
<td>Control of Soilborne Fungi with Biofumigation</td>
<td>$10,000</td>
<td>Anthony Keinath, Samuel Njoroge</td>
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<td>Clemson University, Clemson University</td>
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<tr>
<td>GS04-041</td>
<td>Preliminary Investigation for Application of Supercritical Fluid Extraction Technology for Garlic Oil Extraction</td>
<td>$10,000</td>
<td>Terry Walker, Meidui Dong</td>
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<td>Clemson University, Clemson University</td>
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<tr>
<td>GS03-020</td>
<td>The Assessment of Conservation and Traditional Tillage Systems on Weed Dynamics, Insect Abundance, and Northern Bobwhite Quail Life and Behavioral Patterns</td>
<td>$10,000</td>
<td>William Bowerman, Derek Eggert</td>
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<td>Clemson University, Clemson University</td>
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**ON FARM RESEARCH/PARTNERSHIP GRANTS**

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<tr>
<th>Project #</th>
<th>Project Title</th>
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<th>Project Leaders</th>
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<tbody>
<tr>
<td>OS20-133</td>
<td>The Potential of Inter-seeded Cover Crops for Enhancing Soil Health and Soil Moisture Content in a Row Crop Production System</td>
<td>$20,000</td>
<td>Dr. Sruthi Narayanan</td>
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<td>Clemson University</td>
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<tr>
<td>OS18-118</td>
<td>Cover Cropping to Increase the Sustainability of Cropping Systems by Developing Soil Organic Matter, Improving Soil Health, and Suppressing Weed Growth</td>
<td>$15,000</td>
<td>Dr. Sruthi Narayanan</td>
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<td>Clemson University</td>
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<tr>
<td>OS17-109</td>
<td>Identification of Factors Involved in Peach Skin Streaking</td>
<td>$15,000</td>
<td>Guido Schnabel</td>
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<td>Clemson University</td>
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<tr>
<td>OS16-093</td>
<td>Increasing Sustainability of Peanut, Cotton, and Soybean Production Systems Through Innovative Interseeding Technology to Enhance Farm Profit and Reduce Pest Occurrence</td>
<td>$14,990</td>
<td>Daniel Anco</td>
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<td>Clemson University</td>
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<tr>
<td>OS16-094</td>
<td>Fruit Bagging as a Strategy to Reduce Reliance on Pesticides for the Production of Peaches in the Southeast</td>
<td>$14,967</td>
<td>Juan Carlos Melgar</td>
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<td>Clemson University</td>
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<tr>
<td>OS16-096</td>
<td>Cover Crop Influence on Stored Soil Water Availability to Subsequent Crops</td>
<td>$14,995</td>
<td>Dr. Sruthi Narayanan</td>
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<td>Clemson University</td>
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<tr>
<td>OS16-100</td>
<td>Getting to the Bottom of ‘Bronzing’, A Peach Skin Disorder Causing Severe Losses for Organic and Conventional Peach Growers</td>
<td>$15,000</td>
<td>Guido Schnabel</td>
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<td>Clemson University</td>
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<tr>
<td>OS07-035</td>
<td>On-Farm Use of a Hybrid Vetch Cover Crop to Reduce Fusarium Wilt in Seedless Watermelon</td>
<td>$9,900</td>
<td>Anthony Keinath</td>
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<td>Clemson University</td>
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<tr>
<td>OS03-013</td>
<td>Growing Organic Fruits and Vegetables for Local Farmer’s Markets</td>
<td>$9,925</td>
<td>York Glover</td>
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OS03-010  Poultry Litter Research Project  $12,600  David Gunter
Clemson Extension Service

SUSTAINABLE COMMUNITY INNOVATION GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
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</thead>
</table>
| CS12-087  | Fighting Obesity in Schools By Changing Eating Habits of Students             | $10,000      | Robert Behr
Ashley Ridge High School                                                  |
| CS10-078  | GrowFood Carolina                                                             | $10,000      | Lisa Turansky
South Carolina Coastal Conservation League                                   |
| CS08-065  | Marshview Community Organic Farms – Young Farmers of the Lowcountry           | $9,700       | Sara Reynolds
Marshview Community Organic Farm                                              |
| CS08-064  | Growing the Manning Farmer’s Market                                           | $5,050       | Rebecca Rhodes
City of Manning                                                                  |
| CS07-059  | Chicora Farmers Market                                                        | $6,300       | Amanda Crump
Metanoia CDC                                                                     |
| CS07-058  | Farmers Market Support Activities                                              | $2,570       | Grady Sampson                                                                   |

Total funding from the USDA SARE program to South Carolina
$3,280,190

For further information on projects, contact Candace Pollock, Southern SARE public relations coordinator, at (770) 412-4786 or cpollock@uga.edu.
Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National Institute of Food and Agriculture (NIFA).